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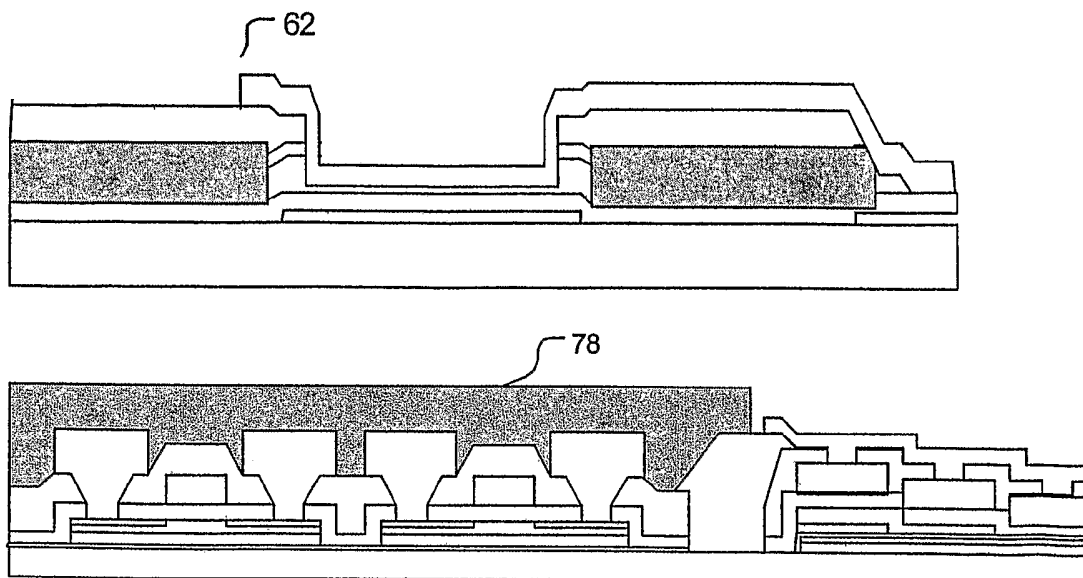
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(54) Title: INTERFEROMETRIC MODULATORS WITH THIN FILM TRANSISTORS AND MANUFACTURING METHOD THEREOF



(57) Abstract: A modulator has a transparent substrate with a first surface. At least one interferometric modulator element resides on the first surface. At least one thin film circuit component electrically connected to the element resides on the surface. When more than one interferometric element resides on the first surface, there is at least one thin film circuit component corresponding to each element residing on the first surface.



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INTERNATIONAL SEARCH REPORT

International Application No

PC US2005/022592

A. CLASSIFICATION OF SUBJECT MATTER

G02B26/08 G02B26/00 G01J3/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G02B G01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, INSPEC, WPI Data, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| X | PATENT ABSTRACTS OF JAPAN vol. 2002, no. 06, 4 June 2002 (2002-06-04) -& JP 2002 062493 A (CANON INC), 28 February 2002 (2002-02-28) abstract; figures 1,2 ----- | 1-14 |
| X | US 2002/015215 A1 (MILES MARK W) 7 February 2002 (2002-02-07) paragraph [0066] - paragraph [0085]; figure 1 ----- | 1-14,17, 18 |
| X | US 6 674 562 B1 (MILES MARK W) 6 January 2004 (2004-01-06) column 10, line 29 - column 11, line 40; figure 1 ----- -/-- | 1-14,17, 18 |



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2005/022592

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | US 2004/051929 A1 (SAMPSELL JEFFREY BRIAN ET AL) 18 March 2004 (2004-03-18) cited in the application paragraphs [0021] - [0028]; figures 1,2,9,11 ----- | 3,4 |
| A | US 6 381 022 B1 (ZAVRACKY PAUL M) 30 April 2002 (2002-04-30) column 7, lines 26-53; figures 1,4 ----- | 6 |
| A | MICROMACHINED DEVICES AND COMPONENTS V 20-21 SEPT. 1999 SANTA CLARA, CA, USA, vol. 3876, September 1999 (1999-09), pages 20-28, XP002349892 Proceedings of the SPIE - The International Society for Optical Engineering SPIE-Int. Soc. Opt. Eng USA ISSN: 0277-786X pages 23-27 ----- | 1-14,17, 18 |
| A | PATENT ABSTRACTS OF JAPAN vol. 2003, no. 12, 5 December 2003 (2003-12-05) & JP 2004 004553 A (SEIKO EPSON CORP), 8 January 2004 (2004-01-08) abstract; figure 1 ----- | 7 |
| A | PATENT ABSTRACTS OF JAPAN vol. 2002, no. 10, 10 October 2002 (2002-10-10) -& JP 2002 175053 A (SONY CORP), 21 June 2002 (2002-06-21) abstract; figures 2,3 ----- | 7,8 |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2005/022592

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

see annex

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1 and 9 (insofar as these claims relate to depositing a semiconductor, metal or oxide as common layer), 2-8, 10-14,17,18

Shared semiconductor, metal or oxide layer

2. claims: 1 and 9 (insofar as these claims relate to depositing a polymer) 15,16,19

Polymer layer as planarization for TFT and post forming layer for Imod

INTERNATIONAL SEARCH REPORT

International Application No

P US2005/022592

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
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